



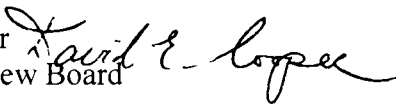
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, D.C. 20460

OFFICE OF  
SOLID WASTE AND EMERGENCY  
RESPONSE

July 13, 2006

**MEMORANDUM**

**SUBJECT:** National Remedy Review Board Recommendations for the Cherokee County Superfund Site

**FROM:** David E. Cooper, Chair   
National Remedy Review Board

**TO:** Cecilia Tapia, Director  
Superfund Division, U.S.EPA Region 7

**Purpose**

The National Remedy Review Board (NRRB) has completed its review of the proposed cleanup action for the Baxter Springs (OU 3) and Treece (OU 4) subsites of the larger Cherokee County Superfund Site, Cherokee County, Kansas. This memorandum documents the NRRB's advisory recommendations.

**Context for NRRB Review**

The Administrator announced the NRRB as one of the October 1995 Superfund Administrative Reforms to help control response costs and promote consistent and cost-effective decisions. The NRRB furthers these goals by providing a cross-regional, management-level, "real time" review of high cost proposed response actions prior to their being issued for public comment. The Board reviews all proposed cleanup actions that exceed its cost-based review criteria.

The NRRB evaluates the proposed actions for consistency with the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) and relevant Superfund policy and guidance. It focuses on the nature and complexity of the site; health and environmental risks; the range of alternatives that address site risks; the quality and reasonableness of the cost estimates

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for alternatives; regional, state/tribal, and other stakeholder opinions on the proposed actions, and any other relevant factors.

Generally, the NRRB makes advisory recommendations to the appropriate regional decision maker. The Region will then include these recommendations in the administrative record for the site, typically before it issues the proposed cleanup plan for public comment. While the Region is expected to give the Board's recommendations substantial weight, other important factors, such as subsequent public comment or technical analyses of response options, may influence the Region's final decision. The Board expects the Regional decision maker to respond in writing to its recommendations within a reasonable period of time, noting in particular how the recommendations influenced the proposed cleanup decision, including any effect on the estimated cost of the action. It is important to remember that the NRRB does not change the Agency's current delegations or alter in any way the public's role in site decisions.

### **Overview of the Proposed Action**

The proposed remedial action will be conducted under a Record of Decision Amendment for the Baxter Springs (OU 3) and Treece (OU 4) subsites of the larger Cherokee County Superfund Site located in the southeastern corner of Kansas. The Cherokee County site is contaminated by chat and tailings from lead and zinc mining that occurred from the early 1900s to 1970. The chat and tailings contain elevated levels of lead, zinc, and cadmium which cause unacceptable risk to human health and the environment. The proposed remedy will address surficial mine waste and adjacent contaminated soil scattered throughout the 17 and 11 square miles of the Baxter Springs and Treece subsites respectively. In addition to direct contact threats, the mine waste also impacts streams where there is contact with mining waste and overland flow during storm events. It also leaches metal contamination into ground water. Actions similar to this proposal have been selected or taken at other subsites of the Cherokee County site including Galena (OU 5 and 7) and the Badger, Lawton, and Crestline Subsites (OU 6).

### **NRRB Advisory Recommendations**

The NRRB reviewed the information package describing this proposal and discussed related issues with Dave Drake and Emily Kaulbach of U.S. EPA Region 7 and Leo Henning of the Kansas Department of Health and the Environment on May 17, 2006. Based on this review and discussion, the Board offers the following comments:

1. The package presented to the Board indicated that the remedial criterion for addressing surficial, non-residential mining wastes is the visual presence of contaminated materials. However, at the meeting, the Region indicated that the concentration-based preliminary remediation goals (PRGs) presented in the package are also intended to serve as action and/or cleanup levels. The Board encourages the use of these numerical levels to trigger action and define when cleanup objectives have been achieved and recommends that they be described in the decisions documents for the site. In addition, the Board recommends that the decision

documents explain how the Region intends to decide which waste piles will be removed and which will be capped in place.

2. The package presented to the Board does not include an array of remedial alternatives (including the no-action alternative) as is typically provided. Instead, it identifies only the Region's preferred remedy. Consequently, the Board is unable to evaluate whether the various actions that comprise the proposed remedy represent the most cost-effective solution. During the meeting, the Region indicated that its remedial preference is based on experiences gained in connection with prior actions taken in the tri-state mining area. The Board recommends that the decision documents evaluate other alternatives, including a no-action alternative. Further, the Board recommends that the decision documents discuss lessons learned from the Region's experiences in addressing other contaminant sources and how they led to the development of the various remedial components, as well as the preferred alternative. This discussion should clearly compare the various remedy components and alternatives in terms of the NCP nine criteria and explain why the selected remedy is preferred.

3. The information presented to the Board indicates that chat sales may be included as part of the remedy. The Region did not indicate whether guidance or fact sheets were available to chat sellers or purchasers on safe chat use or whether these fact sheets are sufficient to ensure that these sales do not cause additional contamination that could lead to future cleanup actions. The Board recommends that the Region, in coordination with Region 6 as appropriate, explore and implement options for ensuring safe chat sales.

4. The cost information presented in the package to the Board is based upon unit costs and volume estimates used to prepare the 1997 Record of Decision (ROD). The total costs from the ROD were modified to adjust for inflation to represent 2006 dollars. It does not appear that further adjustments to the total cost were made based on lessons learned from recent cleanup efforts in the tri-state mining area (e.g., different capping materials, disposal in mine openings, operation and maintenance improvements). In addition, it was not clear to the Board whether the cost estimate included monitoring to ensure the effectiveness of the selected remedy. The Board recommends that the Region revisit the total cost estimate in more detail and provide additional supporting documentation in the record.

5. The package presented to the Board does not include a clear description of the purpose of the proposed cap components (e.g., decrease infiltration to ground water, stabilize waste piles, prevent exposure, support revegetation) or a clear rationale for the thicknesses which are proposed. Various purposes and thicknesses for the cap material were presented to the Board during the oral presentation; however, the Board was not able to evaluate the cost-effectiveness of the Region's proposed cap (e.g., relating to the proposed use of clay versus common fill) or the proposed use of topsoil as opposed to amended soil material (i.e. soil mixed with biosolids). The Board recommends that the decision documents present an analysis of cap materials, including their purpose and the cost associated with placement of these materials, in order to ensure that cap selections are cost-effective.

6. In the package presented to the Board, some of the draft Remedial Action Objectives (RAOs) are inconsistent with EPA policy (e.g., reference to secondary drinking water standards) or do not appear to be related to the proposed remedy (e.g., preventing discharge of contaminated groundwater). The Board recommends that the Region revise the proposed RAOs to reflect EPA guidance, including media, contaminants of concern, exposure routes and receptors, and remediation goals (See EPA's RI/FS guidance (EPA 1988) and sediment guidance (EPA 2005)). The Board recommends that the Region develop separate RAOs for soils and source materials and add RAO(s) for ecological risk pathways consistent with the revised ecological risk assessment and contaminant pathway analysis (see comments 11 and 13).

7. The package presented to the Board states that "the principal threat wastes at the sub-sites consist of mining wastes and mining impacted sediments" and includes all the mining wastes and mining impacted sediments in its estimated volume of principal threat wastes. As defined in *A Guide to Principal Threat and Low Level Threat Wastes* (OSWER Fact Sheet 9380.3-06FS, 1991), principal threat wastes are those source materials considered to be highly toxic or highly mobile that generally cannot be reliably contained or would present a significant risk to human health or the environment should exposure occur. The wastes being addressed under this proposed decision generally do not appear to meet this definition. The Board recommends that the Region re-evaluate its description of principal threat wastes at the site and incorporate a revised description in decision documents.

8. The package presented to the Board indicates the 1997 ROD included a waiver of surface water quality standards based on technical impracticability (TI), but that the Region expects to meet this applicable or relevant and appropriate requirement (ARAR) for this phase of the cleanup. The Board recommends the decision documents include a clear discussion explaining this change in approach (e.g., basis for determining how it is now technically practicable to meet the State's water quality standards) and its impact on cost. In particular, the Board recommends that the Region describe how the surface water quality goal can be attained without cleanup of the upper aquifer. In addition, the ARARs discussion in the package identifies a number of items that do not appear to be ARARs (e.g., secondary MCLs, various Executive Orders, NRD assessment). The Region should coordinate with Headquarters to ensure that the ARARs discussion provided in the decision documents for the site is consistent with Superfund guidance.

9. In the package presented to the Board, Modified Alternative 8A will adopt previously selected institutional controls (ICs) that were intended to address numerous elements of the remedy. Information presented to the Board indicates that some ICs may not yet have been implemented and/or are not successful at preventing inappropriate residential development. The Board recommends that, to the extent possible at this stage of the remedial action, the Region implement ICs and explore potential methods to increase their effectiveness. The Board also recommends that the decision documents include a description of any new effectiveness measures for existing ICs as well as a description of any additional ICs that will be put in place (e.g., State easement program for cap protection) and how their effectiveness will be assured.

10. The Region has recommended subaqueous placement in subsidence structures as a potential remedial action for some of the mining waste. The Board notes that the physical characteristics of the wastes have been altered by mining and processing operations and that subaqueous

placement will introduce the wastes to a different geochemical environment (e.g., pH, redox potential) that may alter contaminant mobility and toxicity. The Board notes that the studies that the Region has performed on the use of this method for dealing with mine waste are not conclusive as to the impacts that potential enhanced contaminant migration could have on the overall success of the remedy. Of particular concern is the contribution of contaminated groundwater to the surface water and sediment problems. The Board recommends that the subaqueous placement of mine waste be further studied prior to full implementation as a remedial alternative. The Board recommends that these studies investigate how these changes will impact contaminant migration and risk. This evaluation should focus not only on the contaminants of concern (lead, cadmium, zinc), but also other metals that could be mobilized.

11. The package presented to the Board presents new ecological risk information along with ecological risk information that supported the existing ROD. This information leads to potentially conflicting estimates of ecological risks for soils and sediments present at these OUs. The Board recommends that the Region consider whether the new information warrants revision to the ecological RAOs. The Board also recommends that ranges for remediation goals be developed to address the ecological risks, consistent with *Ecological Risk Assessment and Risk Management Principles for Superfund Sites* (OSWER Directive 9285.7-28P, October 1999). In addition, the Board recommends that the decision documents summarize and integrate the new information and clarify the basis for the development of the remedial action objectives and conceptual site model (see following comment for additional recommendations regarding sediments).

12. The package presented to the Board did not include a range of risk-based, site-specific, protective Remediation Goals (RGs) for sediment, from which a cleanup level could be selected by balancing the National Contingency Plan's remedy selection criteria. The "MacDonald" values included in the package are literature-based sediment values typically used for screening. The use of screening levels as cleanup levels can lead to more extensive and expensive cleanup than needed to protect environmental receptors, depending on the site-specific situation. The Board notes that the MacDonald values would more properly be considered for the lower boundary of a yet-to-be-developed range of site-specific RGs, which would also allow flexibility should Endangered Species Act issues arise. It was stated in the presentation to the Board that the results of the Tri-State Watershed Framework, inclusive of OU2 (Spring River, which is outside the scope of this action), should provide the needed data to generate a site-specific range of RGs that could apply to both sediment portions of OU 4 (Treece) and OU2. Therefore, the Board recommends that the selection of cleanup levels be delayed until those data are analyzed. The Board recommends that the Region consider including remedy decisions for the sediment portion of OU4 in the later OU2 ROD.

13. In the preferred remedy, the Region proposes remedial actions that will result in remediation of surface water quality. However, the package presented to the Board did not present enough information to understand to what degree various media (surface wastes, subaqueous placed wastes, contaminated sediments) and migration pathways (overland flow, ground water discharge) contribute to the exceedance of water quality standards/criteria and risk to aquatic life. For example, remediation of contaminated ground water in the shallow aquifer is considered impracticable, and contaminated ground water will continue to discharge to local streams, but the

impact of that load on surface water quality is unclear. The Board recommends that the Region evaluate contaminant loading pathways to stream systems and determine the impact of these potential loading pathways on the success of the proposed remediation activities.

14. In the package presented to the Board, the proposed ecological risk-based cleanup levels for soil exceed those proposed for sediment by an order of magnitude. The Board recommends that the Region consider how soils in areas with contaminant pathways to surface water may affect the achievement of remedial goals for sediment and surface water and include a discussion in the decision documents to explain how the proposed cleanup levels are expected to be protective.

15. The Board believes that, in general, approaches to cleaning up all NPL sites within the Tri-State Mining District should be consistent with respect to chat usage, remedial action objectives, and cleanup levels. The Board encourages Region 6 and 7 to continue to work closely together and with the affected States to address potential inconsistencies as part of their ongoing coordination efforts.

The NRRB appreciates the Region's efforts in working together with the potentially responsible parties, state, and community groups at this site. We request that a draft response to these findings be included with the draft Proposed Plan when it is forwarded to your OSRTI Regional Support Branch for review. The Regional Support Branch will work with both me and your staff to resolve any remaining issues prior to your release of the Proposed Plan. Once your response is final and made part of the site's Administrative Record, then a copy of this letter and your response will be posted on the NRRB website.

Thank you for your support and the support of your managers and staff in preparing for this review. Please call me at (703) 603-8763 should you have any questions.

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